UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,294	09/17/2003	Jeffrey Allan Rock	GP-301429	4556

7590 02/21/2006

CARY W. BROOKS
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER	
ALEJANDRO, RAYMOND	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/664,294	ROCK, JEFFREY ALLAN	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/10/04, 09/17/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. This application is a continuation-in-part of Application No. 10/356403, filed 01/31/03.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/10/04 and 09/17/03 was considered by the examiner.

Drawings

3. The drawings were received on 09/17/03. These drawings are acceptable.

Specification

4. The disclosure is objected to because of the following informalities: the current status of the parent application referenced in the first paragraph of the specification should be updated (whether abandoned or patented). Appropriate correction is required.

5. The disclosure is objected to because of the following informalities: the current status of all nonprovisional applications referenced in the specification should be updated (whether abandoned or patented). For example, refer to paragraph 0025. Appropriate correction is required.

Claim Objections

6. Claim 4 is objected to because of the following informalities: the recitation "*a said flow channel*" and "*a said port*" should be changed to a recitation providing adequate antecedent basis. Appropriate correction is required.

7. Claim 6 is objected to because of the following informalities: the recitation "*is branched ed*" appears to be grammatically awkward. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. The terms "*sufficiently above*" in claim 1 and "*sufficient to*" in claims 5 and 7-8 are relative term which renders the claims indefinite. The term "*sufficient*" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In this case, the extent or degree of the term "*sufficient*" is unknown and/or uncertain.

Claim Rejections - 35 USC § 102

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Fujii et al 6528196.

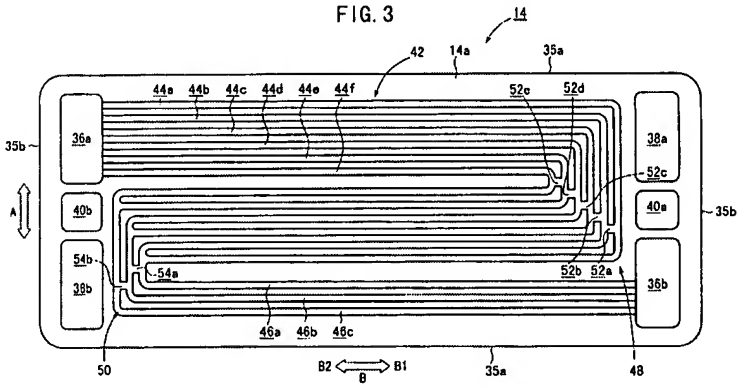
As to claims 1, 5 and 8:

Fujii et al disclose a fuel cell comprising a fuel cell unit including an electrolyte composed of a polymer ion exchange membrane, and anode electrode and a cathode electrode disposed opposingly on both sides of the electrolyte (COL 1, lines 19-27); first and second separators 14, 16; porous first and second gas diffusion layers 24, 26 (COL 2, line 58 to COL 3, line 8/ COL 3, line16-24/ COL 4, line 34-38/ COL 1, lines 40-49). (*The separator components serve as the current collector*). The fuel cell has bent sections flow passage grooves (TITLE). The separator flow field plate is provided with first gas flow passages grooves which communicate with an oxygen containing gas inlet, second gas flow passage grooves into which the first gas flow passage grooves are merged and which communicate with an oxygen containing gas outlet (ABSTRACT/ COL 3, lines 25-50). First communication passages and second communication passages for enabling the air to flow there-through are provided at first and second bent sections of the first gas flow passage grooves and the second gas flow passage grooves (ABSTRACT/ COL 3, lines 25-50). One or a plurality of gas flow passages are also designed thereon (COL 1, lines 45-49).

Figure 3 below depict the flow field comprising gas inlets 36a and 38a, and gas outlets 36b and 38b for oxygen containing and fuel gases, respectively (COL 3, lines 25-35). Further, as

evident from the **Figure 3**, the flow channels have the so-called medial legs intermediate said inlet and exit legs (*the bent sections of the flow channel*).

FIG. 3



Figures 5-9 below contains a depiction of flow restrictors provided by Fujii et al in the flow field plate. Although they have been identified as communication passages, they also act as flow restrictors:

FIG. 5

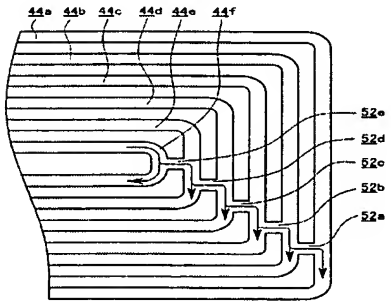


FIG. 6

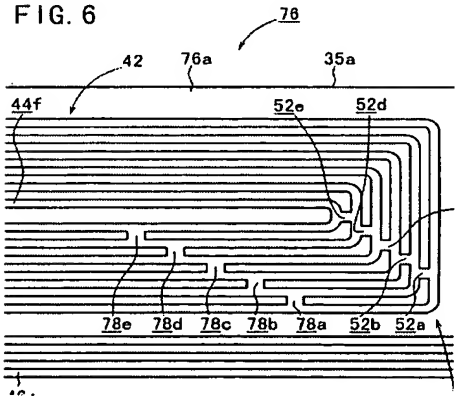


FIG. 7

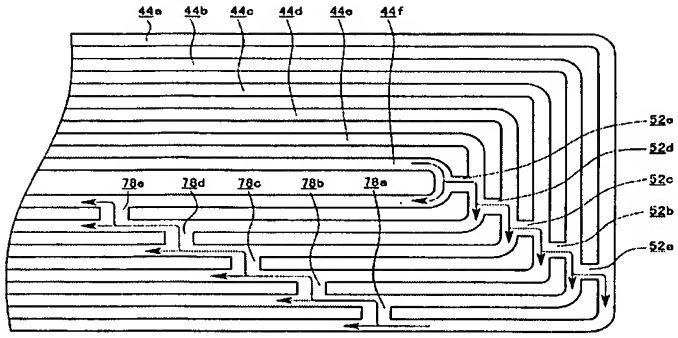


FIG. 8

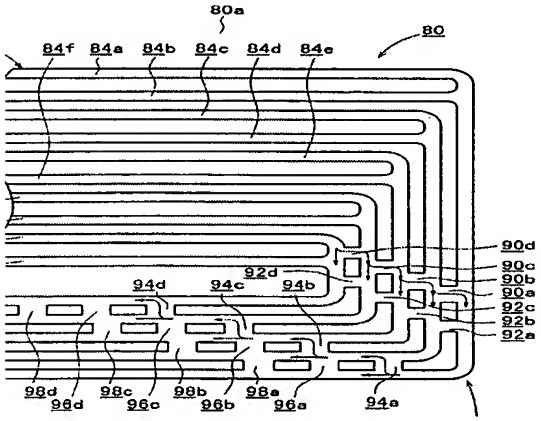
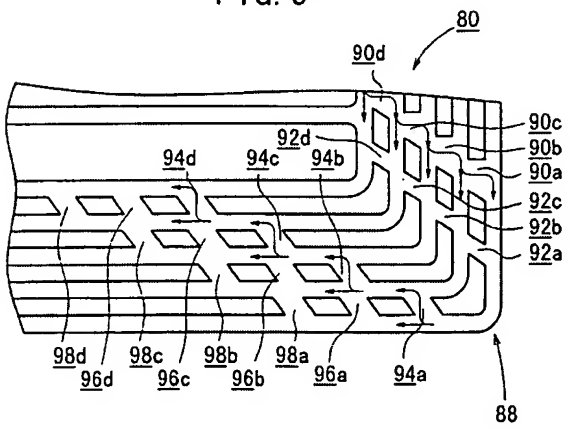


FIG. 9

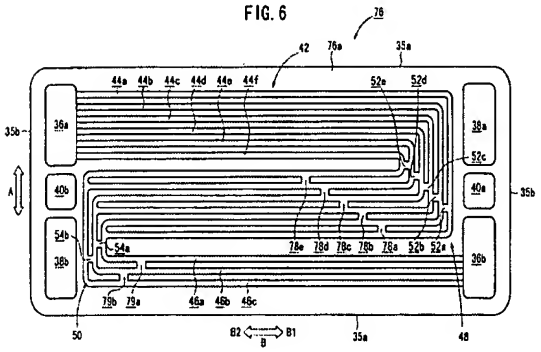


Accordingly, pressure differences associated with the specific communication passages are present in the flow field plate. Significant loss of pressure of the fluid passing through the channels will occur at the communication passages.

As apparent from **Figures 3 and 6**, the flow distribution plate include a section of non-serpentine channels and another section of serpentine channels (*the channel section turning one way and another*) (See FIGURES 3-4).

Figure 6 also illustrates, as a whole, channels configured with different turning points.

FIG. 6



Concerning claims 2-3:

Figure 9 below illustrate flow constriction having different cross-sectional areas along with a tortuous section which includes both the cross-sectional communication passages and the flow bents (See Figures 8-9):

FIG. 9

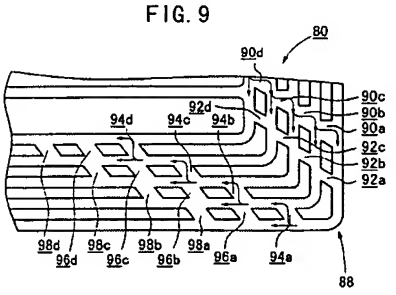
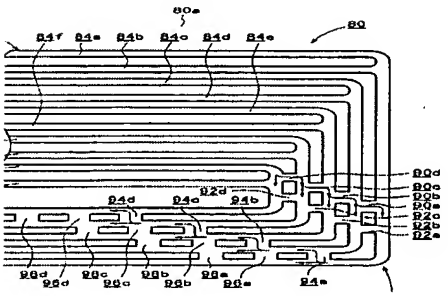


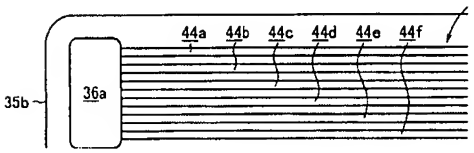
FIG. 8



With regard to claim 4:

Illustrated is inlet 36a and ports for the flow passage grooves:

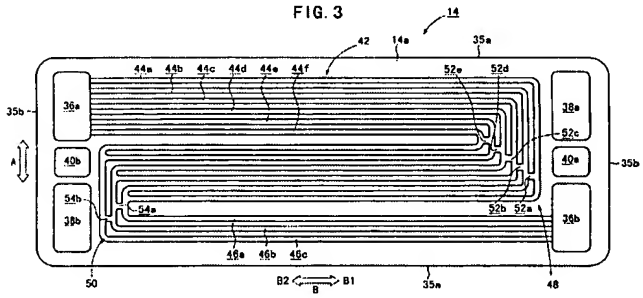
FIG. 3



As to claim 6:

Figure 3 below depict the flow field comprising gas inlets 36a and 38a, and gas outlets 36b and 38b for oxygen containing and fuel gases, respectively (COL 3, lines 25-35). Further, as evident from the **Figure 3**, the flow channels have the so-called medial legs intermediate said inlet and exit legs (*the bent sections of the flow channel*).

FIG. 3



As to claim 7:

Figures 5 and 7 below specifically depict the bifurcation mid-sections:

FIG. 5

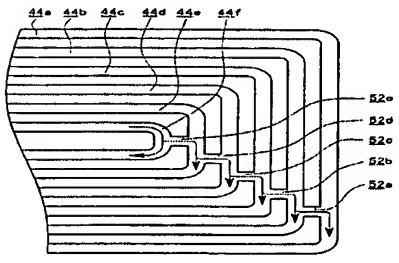
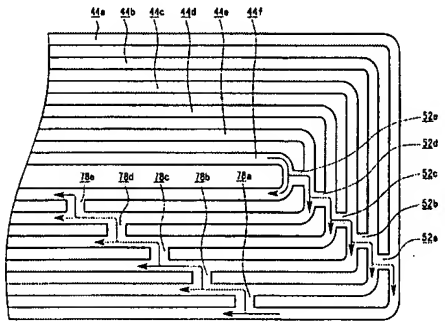


FIG. 7



Figures 3-4 below depict the flow field comprising the branched midsection comprising the branches.

FIG. 3

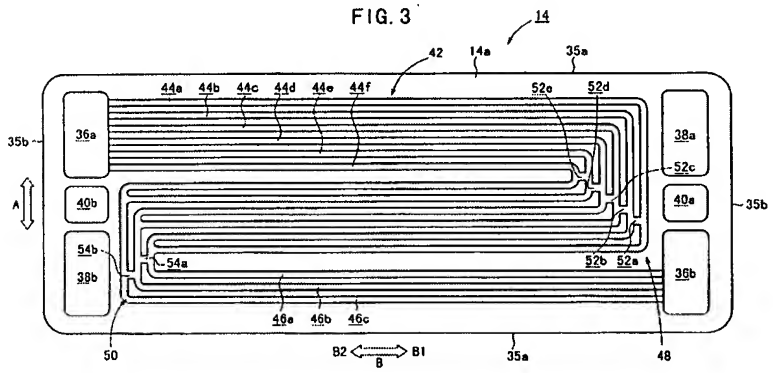
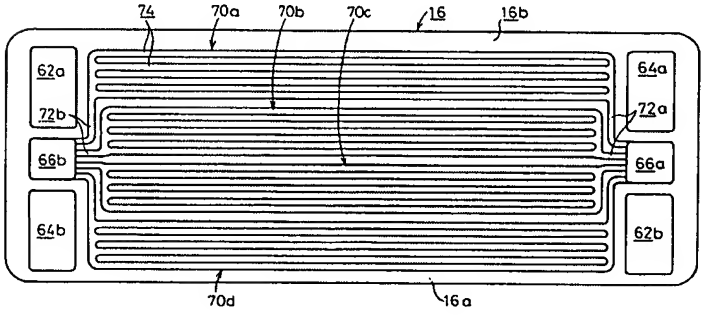


FIG.4



Thus, the claims are anticipated.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745